

Serial No. 10/604,450  
Group Art Unit 2166  
Docket No: SVL920030017US1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPEAL BRIEF – 37 C.F.R § 1.192

U.S. Patent Application 10/604,450 entitled,  
“ISOLATED ORDERED REGIONS (IOR) NODE ORDER”

**Real Party in Interest:** International Business Machines Corporation

**Related Appeals and Interferences:**

None

**Status of Claims:**

Claims 1-33 are pending.

Claims 21-33 were withdrawn from consideration with traverse. The traversal was not found persuasive by the Examiner.

Claims 1-7, 9-17, and 19-20 stand rejected under 35 U.S.C. 102(e) as being anticipated by U.S. 2003/0097357 (Ferrari).

Claims 8 and 18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 2003/0097357 (Ferrari) as applied to claims 1-7, 9-17, and 19-20 above, and further in view of U.S. 2003/0018603 (Tip).

**Status of Amendments:**

In response to non-final Office Action mailed January 25, 2006, Applicants' Amendment was filed April 25, 2006. No amendments were filed in response to the final office action of July 27, 2006.

**Summary of Claimed Subject Matter:**

(NOTE: All citations are made from the original specification, including the figures.)

The present invention, as per independent **claim 1**, provides for a system to order a plurality of nodes associated with entities in a document (see at least **Abstract of Application-**

**As-Filed**), said system comprising: (a) a node generator parsing said entities in said document and creating a plurality of nodes that represent said entities and relationships that exists among said entities (see at least **figure 1 and page 8 of Application-As-Filed**); (b) a node grouper grouping said created plurality of nodes into a plurality of regions (see at least **figure 1 and page 8 of Application-As-Filed**), each of said regions defining an area within a n-dimensional space, wherein n is greater than one (see at least **pages 4, 5 and original claim 1 of Application-As-Filed**); and (c) a formatter for formatting said plurality of regions for storage (see at least **figure 1 and pages 8 and 9 of Application-As-Filed**).

The present invention according to dependent **claim 2**, in addition to the features of claim 1, provides a system wherein said regions are node descendant regions (see at least **figure 17 and page 19 of Application-As-Filed**).

The present invention according to dependent **claim 3**, in addition to the features of claim 1, provides a system wherein said formatted regions are stored in one or more pages (see at least **figures 4a, 4b and page 9 of Application-As-Filed**).

The present invention according to dependent **claim 4**, in addition to the features of claim 1, provides a system wherein said set of regions are grouped by said node grouper based on anticipated access pattern and usage (see at least **pages 8, 9 and 10 of Application-As-Filed**).

The present invention according to dependent **claim 5**, in addition to the features of claim 1, provides a system wherein said node grouper additionally monitors insertion or deletion of nodes in each of said regions, whereby modifications to nodes within a particular region affects only said nodes in said particular region, said modifications causing nesting levels to be created based of a parent level region (see at least **pages 8 and 15 of Application-As-Filed**).

The present invention according to dependent **claim 6**, in addition to the features of claim 1, provides a system wherein said document is a mark-up language based document (see at least **pages 8 and 9 of Application-As-Filed**).

The present invention according to dependent **claim 7**, in addition to the features of claim 6, provides a system wherein said mark-up language based document is an XML document (see at least **pages 8 and 9 of Application-As-Filed**).

The present invention according to dependent **claim 8**, in addition to the features of claim 1, provides a system wherein said system associates post order traversal numbers with said plurality of nodes, said post order traversal numbers identifying containment relationships among nodes (see at least **figure 15 and pages 16 and 17 of Application-As-Filed**).

The present invention according to dependent **claim 9**, in addition to the features of claim 1, provides a system wherein said system is implemented across networks (see at least **page 22 of Application-As-Filed**).

The present invention according to dependent **claim 10**, in addition to the features of claim 9, provides a system wherein said network is any of the following: local area network, wide area network, or the Internet (see at least **page 22 of Application-As-Filed**).

The present invention, as per independent **claim 11**, provides for a method for ordering a plurality of nodes associated with entities in a document (see at least **Abstract of Application-As-Filed**), said method comprising: (a) parsing said entities in said document and creating a plurality of nodes that represent said entities and relationships that exists among said entities (see at least **figure 1 and page 8 of Application-As-Filed**); (b) grouping said created plurality of nodes into a plurality of regions (see at least **figure 1 and page 8 of Application-As-Filed**),

each of said regions defining an area within a n-dimensional space, wherein n is greater than one (see at least **pages 4, 5 and original claim 1 of Application-As-Filed**); and (c) formatting said plurality of regions for storage (see at least **figure 1 and pages 8 and 9 of Application-As-Filed**).

The present invention according to dependent **claim 12**, in addition to the features of claim 11, provides a method wherein said regions are node descendant regions (see at least **figure 17 and page 19 of Application-As-Filed**).

The present invention according to dependent **claim 13**, in addition to the features of claim 11, provides a method wherein said formatted regions are stored in one or more pages (see at least **figures 4a, 4b and page 9 of Application-As-Filed**).

The present invention according to dependent **claim 14**, in addition to the features of claim 11, provides a method wherein said set of regions are grouped by said node grouper based on anticipated access pattern and usage (see at least **pages 8, 9 and 10 of Application-As-Filed**).

The present invention according to dependent **claim 15**, in addition to the features of claim 11, provides a method wherein said method comprises the additional step of monitoring the insertion or deletion of nodes in each of said regions, whereby modifications to nodes within a particular region affects only said nodes in said particular region, said modifications causing nesting levels to be created based of a parent level region (see at least **pages 8 and 15 of Application-As-Filed**).

The present invention according to dependent **claim 16**, in addition to the features of claim 11, provides a method wherein said document is a mark-up language based document (see at least **pages 8 and 9 of Application-As-Filed**).

The present invention according to dependent **claim 17**, in addition to the features of claim 16, provides a method wherein said mark-up language based document is an XML document (see at least **pages 8 and 9 of Application-As-Filed**).

The present invention according to dependent **claim 18**, in addition to the features of claim 11, provides a method wherein said method associates post order traversal numbers with said plurality of nodes, said post order traversal numbers identifying containment relationships among nodes (see at least **figure 15 and pages 16 and 17 of Application-As-Filed**).

The present invention according to dependent **claim 19**, in addition to the features of claim 11, provides a method wherein said method is implemented across networks (see at least **page 22 of Application-As-Filed**).

The present invention according to dependent **claim 20**, in addition to the features of claim 19, provides a method wherein said network is any of the following: local area network, wide area network, or the Internet (see at least **page 22 of Application-As-Filed**).

**Grounds of Rejection to be Reviewed on Appeal:**

1. With respect to pending claims 1-7, 9-17, and 19-20, was a proper rejection made under 35 U.S.C. § 102(e) using existing USPTO guidelines?
2. With respect to pending claims 8 and 18, was a proper rejection made under 35 U.S. C. § 103(a) using existing USPTO guidelines?

**ARGUMENT:**

REJECTIONS UNDER 35 U.S.C. § 102(e)

To be properly rejected under 35 U.S.C § 102(e), a reference must provide for all the limitations (i.e., system elements in case of a system claim and method steps in case of a method claim) of the claim being rejected. Applicants contend that the Ferrari reference fails to teach many of the features of claims 1-7, 9-17 and 19-20.

The presently claimed invention, in independent **claim 1**, provides for a system to order a plurality of nodes associated with entities in a document, said system comprising: (a) a node generator parsing said entities in said document and creating a plurality of nodes that represent said entities and relationships that exists among said entities; (b) a node grouper grouping said created plurality of nodes into a plurality of regions, each of said regions defining an area within a n-dimensional space, wherein n is greater than one; and (c) a formatter for formatting said plurality of regions for storage.

With respect to Applicants' pending independent claim 1, on page 3 of the Office Action dated July 27, 2006, the Examiner erroneously contends that "Ferrari teaches the node generator in figures 14A, B and C where information of a document is converted into ordered nodes (attributes and values) in a tree structure according to relationships amongst them". The Examiner appears to erroneously conclude that elements 112 and 114 can be equated to "nodes". By Ferrari's own admission in paragraph 96, elements 112 and 114 are NOT nodes, but merely correspond to "attributes" and "values", respectively, of a "taxonomy definition process". In paragraph 90 Ferrari further clarifies that "taxonomy definition is the process of identifying the relevant attributes to characterize documents" and "classification is the process of associating



terms with documents” (emphasis added).

The Examiner also appears to erroneously conclude that elements 112 and 114 are created when “information of a document is converted into ordered nodes.” However, Ferrari, in paragraph 91, contradicts the Examiner by clarifying that the structure shown in Figures 14A-C is formed as a result of the above-mentioned “taxonomy definition process” wherein “collections of documents” are arranged into domains, and NOT formed, as the Examiner asserts, by converting a document into ordered nodes. In other words, the taxonomy of attributes/values is created based on data obtained from collections of documents, and NOT based on “parsing said entities in said document”. Ferrari further clarifies in paragraph 100 that the data is acquired from a “collection of documents” in a database and the “collected documents are formatted and parsed to facilitate further processing.” Further in the same paragraph, Ferrari states that the “formatted and parsed documents are processed in order to automatically associate documents with terms.” Applicants assert that Ferrari merely teaches associating a collection of documents with terms in a pre-existing hierarchy, which is NOT the same as parsing entities in a document and creating a plurality of nodes that represent entities and relationships that exists among said entities. Hence, Applicants respectfully assert that the Ferrari reference fails to teach or suggest the features of pending independent claim 1.

With respect to Applicants’ pending independent claim 1, on pages 3 and 4 of Office Action dated July 27, 2006, the Examiner erroneously contends that “Ferrari teaches the grouping of nodes in Figure 17 where the information of a document is grouped into nodes according to attributes and values”. Applicants wish to emphasize that Applicants’ “node grouper” feature groups the created plurality of nodes (created from parsing a document) into a

plurality of regions, with each region defining an area within an n-dimensional space with  $n > 1$ .

By contrast, Ferrari in figure 17 merely re-emphasizes how a “collection of documents” (see element **222** which specifically mentions a collection of documents - **DOCS #1, #2, #3, #4, #5, #6, #7, #8, #9, #10, and #11**) are associated with various attributes. For example, in figure 17 “**DOCS #1, #4**” are associated with the attribute “**RED SOUTH AMERICA**” and “**DOC #4**” is associated with the attribute “**RED CHILE**”. It is clear that elements of Ferrari’s figure 17 represent attributes that are associated with a plurality of documents in a collection and NOT nodes representing entities in one document. Further, there is no teaching in Ferrari’s figure 17 for grouping nodes, as by Ferrari’s own admission it groups documents NOT nodes representing entities in a document. It should be emphasized that by the Examiner’s own admission on page 4 of Office Action dated July 27, 2006, Ferrari’s paragraphs 91 and 103 merely disclose natural grouping of documents into domains and grouping of sub-collection of documents stored together to be retrieved at one time NOT grouping of nodes representing entities in one document.

Furthermore, paragraph 0258 of Ferrari merely teaches how master and slave servers are used to provide search and navigation results to a user, wherein a collection of materials is partitioned among multiple slave servers. The term “multidimensional” in paragraph 0258 of the Ferrari et al. reference is used with respect to navigation of materials; whereas applicants’ pending independent claim 1 uses the term “n-dimensional” with respect to regions that are created by grouping nodes of a document. Hence, Applicants respectfully assert that the Ferrari reference fails to teach or suggest the features of pending independent claim 1.

With respect to Applicants’ pending independent claim 1, on page 4 of office action

dated July 27, 2006, the Examiner further contends that “Ferrari teaches the formatting of materials and documents within the knowledge base”. Applicants respectfully assert that Applicants’ formatter does NOT format “materials and documents”, as the Examiner asserts, but formats a “plurality of regions for storage” where each of regions corresponds to a grouping of nodes in an n-dimensional space. Furthermore, on page 4 of office action dated July 27, 2006, the Examiner contends that “the classification and value formats associate the items in the collection as disclosed in paragraph 21”. The Examiner appears to erroneously conclude that the “Attribute:Value format” can be equated to Applicants’ formatter of claim 1. By Ferrari’s own admission in paragraph 90 “taxonomy definition” is the process of identifying the relevant attributes to characterize documents, determining the acceptable values of those attributes, and defining partial order among terms (attribute-value pairs) and “classification” is the process of associating terms (attribute-value pairs) with documents. The attribute-value pairs in the Ferrari reference are used for the purpose of classifying documents and these attribute-value pairs are represented in “Attribute:Value format”, for example, Products:Movies and Director:Spike Lee. The “Attribute:Value format” of the Ferrari reference is NOT the same as the “formatter” of Applicants’ pending independent claim 1, which formats plurality of regions of a document for storage. Hence, Applicants respectfully assert that the Ferrari reference fails to teach or suggest the features of pending independent claim 1.

Hence, based on the arguments provided above, Applicants contend that the Ferrari reference fails to provide for many of the features of Applicants’ pending independent claim 1.

The present invention, in independent **claim 11**, provides for a method for ordering a plurality of nodes associated with entities in a document, said method comprising: (a) parsing

said entities in said document and creating a plurality of nodes that represent said entities and relationships that exists among said entities; (b) grouping said created plurality of nodes into a plurality of regions, each of said regions defining an area within a n-dimensional space, wherein n is greater than one; and (c) formatting said plurality of regions for storage.

Independent claim 11 of Applicants' pending claims provides for similar features as independent claim 1. Hence, the arguments provided above with respect to claim 1 apply to the features of independent claim 11 and Applicants contend that the Ferrari reference fails to provide for many of the features of Applicants' pending independent claim 11. The above-mentioned arguments with respect to independent claims 1 and 11, substantially apply to pending dependent claims 2-7, 9, 10, 12-17 and 19-20 as they inherit all the features of the claim from which they depend. Hence, Applicants' respectfully assert that pending dependent claims 2-7, 9, 10, 12-17 and 19-20 are allowable.

#### REJECTIONS UNDER 35 U.S.C. § 103(a)

To establish a prima facie case of obviousness under U.S.C. § 103, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

Claims 8 and 18 of the applicants' pending claims depend from independent claims 1 and 11. Hence, the above-mentioned arguments with respect to independent claims 1 and 11,

substantially apply to dependent claims 8 and 18 as they inherit all the limitations of the claim from which they depend. Hence, applicants respectfully assert that pending dependent claims 8 and 18 are allowable.

Applicants wish to note, however, that the Ferrari reference would not have been properly combined with the Tip et al. reference by one of ordinary skill in the art, as there would have been no teaching, suggestion, or motivation for allowing such a combination. Specifically, the Ferrari reference relates to the field of information search and navigation systems, whereas, the Tip et al. reference relates to the field of object-oriented programming and merely teaches a method of programming instructions to construct a call graph. They are not in the same field of hierarchical data structure as the Examiner asserts. Applicants respectfully contend that one of ordinary skill in the art would not have been able to combine specific features of Ferrari with features of Tip without a teaching, suggestion or motivation.

Furthermore, paragraph 0114 of the Tip et al. reference, merely teaches associating integers with each class (well known in the art of object-oriented programming) corresponding to a post-order traversal of the class hierarchy. There is NO mention in the citation or the Tip et al. reference in its entirety of associating post-order traversal numbers with a plurality of nodes, wherein these nodes are created by parsing entities of a document, a feature of Applicants' pending claims.

The Tip et al. reference in view of Ferrari et al. reference by themselves or in their entirety fail to provide for: i) parsing entities in a document and creating a plurality of nodes that represent the entities and relationships that exists among the entities; ii) grouping the created plurality of nodes into a plurality of regions, each of the regions defining an area within a n-

dimensional space, wherein  $n$  is greater than one; and iii) formatting the plurality of regions for storage.

Furthermore, Applicants assert that since the primary reference, Ferrari, fails to teach the features of independent claims 1 and 11, it would be moot to argue that the combination of Ferrari and Tip teaches the features of dependent claims 8 and 18.

SUMMARY

As has been detailed above, none of the references, cited or applied, provide for the specific claimed details of applicant's presently claimed invention, nor render them obvious. It is believed that this case is in condition for allowance and reconsideration thereof and early issuance is respectfully requested.

As this Appeal Brief has been timely filed within the set period of response, no petition for extension of time or associated fee is required. However, the Commissioner is hereby authorized to charge any deficiencies in the fees provided, to include an extension of time, to Deposit Account No. 09-0460.

Respectfully submitted by  
Applicant's Representative,

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**Claims Appendix:**

1. **(Original)** A system to order a plurality of nodes associated with entities in a document, said system comprising:
  - a. a node generator parsing said entities in said document and creating a plurality of nodes that represent said entities and relationships that exists among said entities;
  - b. a node grouper grouping said created plurality of nodes into a plurality of regions, each of said regions defining an area within a n-dimensional space, wherein n is greater than one; and
  - c. a formatter for formatting said plurality of regions for storage.
2. **(Original)** A system as per claim 1, wherein said regions are node descendant regions.
3. **(Original)** A system as per claim 1, wherein said formatted regions are stored in one or more pages.
4. **(Original)** A system as per claim 1, wherein said set of regions are grouped by said node grouper based upon anticipated access pattern and usage.
5. **(Original)** A system as per claim 1, wherein said node grouper additionally monitors insertion or deletion of nodes in each of said regions, whereby modifications to nodes within a



particular region affects only said nodes in said particular region, said modifications causing nesting levels to be created based of a parent level region.

**6. (Original)** A system as per claim 1, wherein said document is a mark-up language based document.

**7. (Original)** A system as per claim 6, wherein said mark-up language based document is an XML document.

**8. (Original)** A system as per claim 1, wherein said system associates post order traversal numbers with said plurality of nodes, said post order traversal numbers identifying containment relationships among nodes.

**9. (Original)** A system as per claim 1, wherein said system is implemented across networks.

**10. (Original)** A system as per claim 9, wherein said network is any of the following: local area network, wide area network, or the Internet.

**11. (Original)** A method for ordering a plurality of nodes associated with entities in a document, said method comprising:

- a. parsing said entities in said document and creating a plurality of nodes that represent said entities and relationships that exists among said entities;

- b. grouping said created plurality of nodes into a plurality of regions, each of said regions defining an area within a n-dimensional space, wherein n is greater than one; and
- c. formatting said plurality of regions for storage.

**12. (Original)** A method as per claim 11, wherein said regions are node descendant regions.

**13. (Original)** A method as per claim 11, wherein said formatted regions are stored in one or more pages.

**14. (Original)** A method as per claim 11, wherein said set of regions are grouped based upon anticipated access pattern and usage.

**15. (Original)** A method as per claim 11, wherein said method comprises the additional step of monitoring the insertion or deletion of nodes in each of said regions, whereby modifications to nodes within a particular region affects only said nodes in said particular region, said modifications causing nesting levels to be created based of a parent level region.

**16. (Original)** A method as per claim 11, wherein said document is a mark-up language based document.

**17. (Original)** A method as per claim 16, wherein said mark-up language based document is an XML document.

**18. (Original)** A method as per claim 11, wherein said system associates post order traversal numbers with said plurality of nodes, said post order traversal numbers identifying containment relationships among nodes.

**19. (Original)** A method as per claim 11, wherein said method is implemented across networks.

**20. (Original)** A method as per claim 19, wherein said network is any of the following: local area network, wide area network, or the Internet.

**21. (Withdrawn)** A method for ordering nodes in a document via isolated ordered regions, said method comprising the steps of:

- a. parsing said document;
- b. creating nodes representing entities of said document and relationships that exists among said entities;
- c. mapping said created nodes based upon a level and step associated with each of said nodes;
- d. grouping said mapped nodes into a plurality of regions, said grouping identifying, for each of said regions, at least the following parameters: a minimum step, a minimum level, a maximum step, a maximum level, said parameters giving a region its dimension and order within said document;
- e. ordering said regions based upon ascending minimum step and minimum level;
- f. calculating step range associated with each of said regions; and

g. reordering said regions based upon ascending step range, minimum level, and minimum step, said reordering reflecting parent-child relationships among said nodes.

**22. (Withdrawn)** method as per claim 21, wherein said regions are node descendant regions.

**23. (Withdrawn)** A method as per claim 21, wherein said method is implemented across networks.

**24. (Withdrawn)** A method as per claim 23, wherein said network is any of the following: local area network, wide area network, or the Internet.

**25. (Withdrawn)** A method as per claim 21, wherein said document is a mark-up language based document.

**26. (Withdrawn)** A method as per claim 25, wherein said mark-up language based document is an XML document.

**27. (Withdrawn)** A method as per claim 21, wherein said method comprises the additional step of monitoring the insertion or deletion of nodes in each of said regions, whereby modifications to nodes within a particular region affects only said nodes in said particular region, said modifications causing nesting levels to be created based of a parent level region.

**28. (Withdrawn)** A method as per claim 21, wherein said set of regions are grouped by said node grouper based upon anticipated access pattern and usage.

**29. (Withdrawn)** An article of manufacture comprising a computer usable medium having computer readable program code embodied therein which orders nodes in a document via isolated ordered regions, said medium comprising:

- a. computer readable program code parsing said document;
- b. computer readable program code creating nodes representing entities of said document and relationships that exists among said entities;
- c. computer readable program code mapping said created nodes based upon a level and step associated with each of said nodes;
- d. computer readable program code grouping said mapped nodes into a plurality of regions, said grouping identifying, for each of said regions, at least the following parameters: a minimum step, a minimum level, a maximum step, a maximum level, said parameters giving a region its dimension and order within said document;
- e. computer readable program code ordering said regions based upon ascending minimum step and minimum level;
- f. computer readable program code calculating step range associated with each of said regions; and

- g. computer readable program code reordering said regions based upon ascending step range, minimum level, and minimum step, said reordering reflecting parent-child relationships among said nodes.

**30. (Withdrawn)** An article of manufacture as per claim 29, wherein said medium further comprises computer readable program code monitoring the insertion or deletion of nodes in each of said regions, whereby modifications to nodes within a particular region affects only said nodes in said particular region, said modifications causing nesting levels to be created based of a parent level region.

**31. (Withdrawn)** An article of manufacture as per claim 29, wherein said document is a mark-up language based document.

**32. (Withdrawn)** An article of manufacture as per claim 31, wherein said mark-up language based document is an XML document.

**33. (Withdrawn)** An article of manufacture as per claim 29, wherein said regions are node descendant regions.

## **Evidence Appendix**

None

**Related Proceedings Appendix**

None